



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/601,907

06/24/2003

Ju-Yup Kim

030681-528

7572

21839 7590 02/08/2007  
BUCHANAN, INGERSOLL & ROONEY PC  
POST OFFICE BOX 1404  
ALEXANDRIA, VA 22313-1404

EXAMINER

MERCADO, JULIAN A

ART UNIT

PAPER NUMBER

1745

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
--	-----------	---------------

3 MONTHS

02/08/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/601,907

Applicant(s)

KIM ET AL.

Examiner

Julian Mercado

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 1745

## DETAILED ACTION

### *Remarks*

This Office action is responsive to applicant's amendment filed November 8, 2006.

Claims 1 and 3-21 are pending.

This Office action corrects the statutory ground of rejection for claim 21 and is therefore made NON-FINAL.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 4 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kita (JP 1-265-454).

The rejection is maintained for the reasons of record. The examiner notes that the scope of the present claims are as previously presented. Applicant's arguments filed with the present amendment have been fully considered, however they are not found persuasive.

Applicant is noted to characterize Kita as disclosing "an ester [as] shown in formula I or formula II..." in alleged contrast with the presently claimed invention (paragraph bridging pages 1-2 of applicant's remarks). This alleged contrast appears to the examiner as being premised on an ester not being readable on the claimed oxalate compound. In reply, the examiner asserts that

Art Unit: 1745

oxalate compounds, as established by Attachment B submitted by applicant on May 19, 2006, are indeed “salts or esters of oxalic acid, wherein an oxalate ion is  $(\text{COO})_2^{2-}$ .” Refer to the May 19, 2006 amendment on page 2.

The citation to pages 6 and 15 of the specification is noted, as are applicant's assertions that “the presently claimed 0.001-10 parts by weight of oxalate provides an unexpected advantage of increasing the reversible capacity of sulfur without causing the batteries to degrade.” This assertion for unexpected results is not found persuasive as the claims are not directed to a lithium *sulfur* battery, nor do the claims have any amount of sulfur present in any other respect. Any allegations for unexpected results must occur over the entire claim range and be commensurate in scope with the claims. See *In re Clemens*, 622 F.2d 1029, 1036, 206 USPQ 289, 296 (CCPA 1980). Notwithstanding the foregoing, merely recognizing additional advantages or latent properties that are otherwise present in the prior art is not sufficient to overcome an assertion for obviousness. See *In re Wiseman*, 596 F.2d 1019, 201 USPQ 658 (CCPA 1979) The only difference between the claimed invention and the teachings of Kita, as detailed in the prior Office action, is the amount of the oxalate. The examiner maintains that absent of unexpected results, the amount of oxalate, presence of which as described in the Abstract “prevent[s] a cell swelling, solution leakage, and the deterioration of the cell performance...” is an optimizable parameter for the result-effective variables thus described. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)

Claims 5-18, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kita (JP 1-265-454) in view of Chu et al. (U.S. Pat. 6,030,720).

The rejection is maintained for the reasons of record. Claim 21 is rejected for the reasons of record for claims 5-18 and 20, as set forth in the August 9, 2006 Office action on page 3 (herein incorporated by reference). Upon further consideration, claim 21 is modeled after claim 5 but omits propylene carbonate as a member of its Markush limitation for the solvents. However, as in the prior Office action, the examiner maintains that polyglymes and dioxolanes as solvents are art-recognized equivalents to carbonates as taught by Kita, and would be obvious variants in view of their known conductivity properties.

Applicant's arguments filed with the present amendment have been fully considered, however they are not found persuasive.

Applicant submits that Kita's propylene carbonate is not interchangeable with or equivalent to the claimed organic solvents as disclosed by Chu et al. Applicant further states that no motivation is provided in the Office action, with Chu et al. allegedly merely disclosing organic solvents.

These arguments are not persuasive. Firstly, Chu et al. is not considered to merely disclose organic solvents. Indeed, the patentees specifically disclose carbonates, polyglymes and dioxolanes—the very same class of organic solvents that are presently claimed. Chu et al. also employ these solvents for lithium sulfur batteries—the very same type of battery disclosed by applicant. Chu et al. further disclose that these “electrolytes generally are designed for maximum conductivity.” See col. 3 lines 4-20. The examiner thus maintains the position that polyglymes and dioxolanes, as taught by Chu et al., are art-recognized equivalents to carbonates,

Art Unit: 1745

as taught by both Chu et al. and Kita. As to there being no motivation provided in the Office action, the examiner asserts that "[t]he art provided the motivation to make the claimed compositions in the expectation that they would have similar properties." See *In re Dillon*, 919 F.2d at 693, 16 USPQ2d at 1901.

### ***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian Mercado whose telephone number is (571) 272-1289. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

  
jam

  
PATRICK J. RYAN  
SUPERVISOR